IN THE CLAIMS:

The following listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

42. (Currently amended) A hydraulic or pneumatic machine with vertical shaft, with tilting blades, characterized by the fact that, in view of converting the energy of a pressure fluid or of a fluid stream into mechanical energy and in view of achieving a symmetrical fluid circulation in the machine, consists of a stator (A) made up of a cylindrical shell (1) provided with two openings radially arranged to diametrically opposed directions - one for fluid inlet (2), eventually in the form of a convergent nozzle and one for fluid outlet (3), eventually in the form of a divergent nozzle and two fixed or detachable lids - an upper (4) and a lower (5) one; two coaxial rotors rotating to opposite senses from one another - an upper one (B) and a lower one (C) - in form of disks, with parallel front faces, each consisting either of a flat ring plane (6) provided on its front face, with several shaped grooves (b), equally spaced, wherein some tilting blades (12) are installed, or an external stiffening ring (16) provided with orifices (p) for the blade bearings, with of rods (17), known in themselves, radially arranged, also used as position limiters for the tilting blades (12) in passive position on the rotor, being shaped for this purpose to the blades profile, coupled by means of a frame (7) - for the upper rotor (B) - to a disk (8) provided with a hub (10), fastened by elements known in themselves, onto an upper outlet shaft (52) - for the lower rotor (C) respectively - to a disk (9) provided with a hub (11) fixed on a lower outlet shaft (53), the two shafts getting out either each through the lid adjacent to the respective rotor through some central orifices (w', x') of the lids (4, 5) respectively being supported in some radial - axial bearings (54) also provided with sealing elements, known in themselves, or get out through the same lid of the casing (A), either the upper (4) or the lower (5) one, the rotor adjacent to the respective lid being fixed onto a tubular shaft (67) having a central channel (y') getting out through the central orifice (w'), (x') of the respective lid, resting on it by means of an axial - radial bearing (68) also provided with a sealing device, the other rotor being fixed on a central shaft (66) resting both in an axial - radial bearing (69), provided with a sealing device, mounted in the central channel (y') of the tubular shaft (67) and, eventually, in an additional bearing (70) provided on a lid in its vicinity, the outer ends of the shafts being capable to be coupled to a power

consumer each or among them, through known means, in order to covey the motion to one outlet shaft (55, 72 respectively); a number of tilting blades (12), each consisting of a rectangular panel (c) or a panel having the shape of a distorted rectangular, with two opposite sides (d, e) in the form of an ellipse arc, with a plane upper face (h) and a lower face, either plane (i) and parallel to the upper one, or curve (j), eventually provided with stiffening ribs (k) and a cylindrical hub (f), the outer face of which is tangent to the upper face (h) of the panel, provided with a central orifice (g) fitted with a shaft (15), each blade (12) being fitted either in a groove (b), duly shaped to the lower face of the tilting blade, bordered at the outer end by a plane surface (o) or curve surface (s) provided with an orifice (p) and at the other end by a plane surface (q) or curve surface (t) respectively with an orifice (r), the two orifices being coaxial meant to fasten some radial or axial - radial bearings (13) and (14) respectively, known in themselves, for hinged connecting of the blade (12) by means of the shaft (15), or between the external ring (16) and frame (7) provided with radial bearing (13) and (14) respectively, or in the absence of the external ring (16), the tilting blades (12) are bracketed only in bearings (14) installed on the internal frame (7) of the rotor, also provided with position limiters (20) for blade support in passive position, the blades (12) being arranged on the front face of each rotor, radial, or so that the axis of each tilting blade makes with the tangent to the inner circular outline of the plane (6), drawn to the intersection point of respective axis, a $\beta < 90^0$ angle with the vertex facing the rotor moving sense, so that each blade (12) should have the hub located to the moving sense of the respective rotor; one driving mechanism for each blade (12) constituted from a simple cinematic chain, made up, in different constructional variants, from known in themselves elements, e.g. a lever (21) either a gearing or a gearing with a rack tappet, which makes the coupling between the tilting blade shaft (15) or, in other constructional variant, directly between the tilting blade (12) - which can freely rotate on its shaft and an element – either a roller (23), or a skid (43) located on the tilting blade (12) upper face– into contact with one or both guiding faces of the cam corresponding to the respective rotor, so that the element acting the blade, determining its tilt during the rotation of the respective rotor, being able to be either the roller (23), into contact with the both guiding faces of the respective cam, from which, by means of the mentioned mechanism, the movement is conveyed to the blade shaft, or another element – assuring the permanent contact between the roller (23) or the skid (43) and the guiding face of the respective cam – e.g. the working fluid pressure acting on the active face of the tilting blade, properly shaped, or by means of counterweight properly installed on the lever arm attached to the blade shaft, or by means of springs acting properly either on the blade, if it can freely rotate on its shaft, or on the shaft fitted with the blade, or on other elements of the mechanism, all

known in themselves; two cams, one for all the tilting blades on the upper rotor (B) and another for those on the lower rotor (C), made in different constructional variants, either in the shape of circle (24, respectively 25), each having two guiding front faces or only one, fitted inside of a drum (D) or located on the upper lid (4) and on lower lid (5) of the casing (A), or radial cams (34, respectively 35), each having two guiding radial faces or only one, fitted inside of the drum (D), or front cams (41, respectively 42) having one guiding front face, fixed on the outer face of the drum (D), at its extremities the two cams having the same profile permitting, during a complete rotor rotation, that each tilting blade (12) occupy, due to its own driving mechanism, during a rotation fraction - defined by a specific angle γ - an active position - on the angular sector γ_2 - wherein the upper face (h) of the blade makes an angle $\alpha \leq 90^0$ with the front face of respective rotor, or a passive position - on the angular sector γ_4 - where the upper face (h) of the blade is within the plane of the front surface of the rotor, or a transition phase from passive to active position - on the angular sector γ_1 - or from the active to passive position - on the angular sector γ_3 - the cams being symmetrically arranged against the symmetry plane of the machine so that their guiding surfaces assure the symmetrical arrangement of the angular sector $\gamma_1 \div \gamma_4$ specific to a rotor as compared to those specific to the other rotor against the symmetry plan of the machine; a drum (D) consisting of a central body (45), with a cylindrical outer face, interlocked to a deflector (46) with symmetrical lateral surfaces (u') making a sharp angle between them and connected to the outside face of the body (45), eventually provided with some gaps (v') having curve surfaces, permitting overlapping of the deflector (46) with the angular zone γ_1, and a rib (47), diametrically opposed, some fitted with stiffening plates (48, 49), fixed to the machine stator (A), in the symmetry plan of the machine, by means of spacers (50) and of one elements - screws, nuts - known in themselves, so that, inside the machine are formed two symmetrical, semicircular channels (a), having rectangular passage section, bordered by the front faces of the two rotors (B, C) moving to opposite sense to one another, the inner face of the stator (A) or, possibly, of a cylindrical segment (51) fixed on the inner face of the shell (1) within the zone covered by the angle $\gamma 2$, in view of diminishing the clearance between the channel face and the outer edge of the blade in active position on the rotor, and the outer face of the drum (D), each taking over half of the inlet fluid flow to the machine, the cams (24, 25) profile assuring the tilting of the blades (12) on each of the two rotors in active position in one of the two semicircular channels (a) so that the fluid pressure in each channel, acting on the lower face (i) or (j) of a rotor blade, during the time it is in active position, obstructing the channel section, determines the movement of respective rotor to the flowing sense of the

fluid, whereas, due to the fluid flowing to the same sense in the two channels (a), the rotors (B, C) rotate to opposite sense.

43. (Previously presented) A hydraulic or pneumatic machine according to claim 42, characterized by the fact that, in view of increasing the passage section and, accordingly, the working fluid flow rate in the machine, it has channels (a) for fluid circulation arranged in a multistaged way, having equal or different dimensions from one stage to the other, in an even number of stages, consisting of a casing (A) inside of which being several rotors grouped by two packages each coupled to one of the motor shafts: a package (H) consisting of two extreme rotors with a front face each, provided with tilting blades, located face to face, one on a machine shaft - either the upper rotor (B) or the lower rotor (C), whereas the other, a ring rotor (E), different from constructional view point only through the lack of the coupling elements on the machine shaft - the disk (8) or (9) and the hub (10), (11) respectively - and, in case the machine has more than two stages, a number of intermediate, ring like rotors (G_1, G_2....) located between the extreme rotors, each consisting either of a ring plane (6) fixed on a frame (7) and having two parallel front faces provided with the tilting blades (12), or from an external ring (16) concentric with the inner frame (7) fixed to it by means of some rods (17), possibly radial arranged, which can also serve as position limiters for the tilting blades (12) in passive position, being duly shaped for this function according to the blades profile, all the rotors of the package (H) having the tilting blades identical or different in terms of size and number from one stage to the other and arranged in such a way as to assure them the same moving sense, fixed between them by means of fastening plates (77) and some tie bars (76), spaced on their outer outline, so that, the whole package (H), by the hub (10) or (11) on the rotor fixed on a shaft (B) or (C), conveys the motion to the respective shaft of the machine (52, 67, 53) or (66) depending on the assembling variant chosen; a package (I) consisting of one or several intermediate rotors respectively, in the form of a disk (F_1, F_2.....) located between the rotors of the other package, similar from constructional view point to the ring like rotors (G), different from these consisting in the existence of the coupling elements, - a disk (9) or (8) provided with a hub (11) or (10) - to the other shaft of the machine (53, 66, 52) or (67), the rotor having two parallel front faces provided with shaped grooves (b) locating tilting blades (12) similar to those existing on the rotors of the other package (H) at the respective stage but arranged in such a manner as to assure it a rotation movement to the opposite sense of the rotors of the other package - the distance between the front faces of the neighboring rotors being constant at all the stages of the machine or different from one stage to the other, depending on

blades width - the tilting blades (12) on the two front faces of each intermediate rotor (F_1, F_2.... G_1, G_2.....) being either each driving or coupled two by two, in view of synchronizing their movement, e.g. by means of some geared segments (81), permanently engaged, installed on the shaft of each blade, so that when one is driven - the leading blade - the other - the led blade - shall any moment take a symmetrical position to it, or in other constructional variant, in view of reducing the thickness of the intermediate rotors (F, G) the latter have the tilting blades (12), placed in opposite positions on the two front faces, being installed coaxially either in a seat, properly shaped, or between the outer ring (16) and the inner frame (7), in some common bearings (13, 14) of the two blades, each blade having on its panel (c) edge one hub consisting of one or several elements (f), alternating with those making the hub of the pair blade, so as to make together a "hinge" type articulation, the two blades being fitted, by their hubs (f), on two coaxial shafts - one filled (15) and one tubular (78) - coupled between them by e.g. by a gear known in themselves, for synchronizing the movement of the two tilting blades (12) when driving one of them - the leading blade - by means of the driving mechanism installed on its shaft, or each being able of a free movement on the common shaft (15), driven either separately, by a spring (44) fitted e.g. in the hub of each blade or simultaneously by a single spring (44) installed between neighboring elements (f) of the tilting blades hubs, acting on the both tilting blades; a number of drums (D_1, D_2....) equal to the number of machine stages, each located between the front faces of two neighboring rotors rotating to opposite sense from one another, arranged in the same position with the deflector (46) and rib (47), the extremities of which do not surpass the rotors outline, in the symmetry plane of the inlet and outlet fluid connection respectively, the neighboring drums being fixed to one another so that the rotors movement be not hindered, either through the outside of the disk like intermediate rotors (F_1, F_2....) by means of spacers (79) located between the fastening plates (48), (49) respectively coupled to the deflector (46) and to the rib (47) respectively, on each drum, or inside the frame of the ring like intermediate rotors (G_1, G_2...) by means of the spacers (79) located between some fastening rings (80) inside each drum, as part of its body (45), the whole drums package thus formed being fastened onto the casing (A) lid located in the vicinity of the extreme ring rotor (E) by means of shorter spacers (50) placed between the fastening ring (80) on the closest drum (D), to the lid and the respective lid (4) or (5), located inside the rotor frame (E); driving mechanisms of the tilting blades (12) either for all the rotors of the machine, installed on the shaft of each blade or only on the shaft of the leading blades in the case of intermediate rotors (F_1, F_2... G_1, G_2...) with the blades on the two faces coupled for their movement synchronization, or only for

the tilting blades (12) on the rotors located either at the first or the last stage of the rotors package, the movement being simultaneously conveyed from each of them to all the leading blades existing on the same vertical in the respective package of rotors, either, in the case of the rotors package (H, J) by a joint rack (87), located in a casing (88) fitted on the perifery of the rotors making the respective package, engaged with some pinions (86) fixed at the outside of the rotor, on the end of each shaft (15) of the respective leading blades, or, in the case of the rotors package (I, K) by some linking elements coupled to the driving mechanisms of the tilting blades from all the stages of the package, built in different constructional variants, according to the driving mechanism of each tilting blade, known in themselves, e.g. a joint stem (89) hinged to all levers (21) or a joint vertical rack (90) which engages simultaneously the pinions (26) from all the stages, or a joint shaft (91) on which are fixed all the cone gears (30) of the rotors package found on the same vertical, the disks of all rotors making the respective package being provided with orifices (m') permitting the fitting of the mentioned linking elements, the fixed cams (24 and 25, or 34 and 35, or 41 and 42) being arranged in such a way as to assure the simultaneous movement of the blades located on the same vertical generatrix of the respective package of rotors.

44. (Previously presented) A hydraulic or pneumatic machine according to claim 43, characterized by the fact that, in a constructional variant, the rotors package fixed between them through the inside (I) consists of a single intermediate disk like rotor (F_1) located in the machine in the vicinity of the extreme rotor (B) or (C) of the other package of rotors (H) and a number of intermediate ring like rotors (G), all the rotors of the package being rigidly fixed between them by means of the longitudinal tie bars (76) and the fastening plates (77), equally spaced on the inner outline of each rotor frame (7), inside the drums (D), the whole package of rotors being coupled to the machine shaft by the hub of the disk like rotor (F_1), the stator (A) having the lid (4) or (5) located in the vicinity of the extreme ring rotor (E) of the rotors package fixed in between through the outside (H), shaped to the form of the ring rotors (G) and (E) making the two packages.

45. (Previously presented) A hydraulic or pneumatic machine according to claim 43, characterized by the fact that, in a constructional variant, in view of making fluid circulation channels (a) multistaged in an uneven number of stages, has the rotors grouped into two packages with an equal number of rotors, each coupled to one of the machine shafts: a package (J) consisting of an extreme rotor, with one front face, fixed on a machine shaft - either the upper rotor (B) or the lower rotor (C) - and a number of

intermediate ring rotors (G_1, G_2....) with two front faces, all the package rotors being fixed between them by means of longitudinal tie bars (76) and of some fastening plates (77), fitted with tilting blades (12) on their front faces arranged in such a way as to assure them the same rotation sense, the whole package being coupled to the machine shaft (52, 67, 53) or (66) on which the extreme rotor (B) or (C) is fixed by its hub (10) or (11), depending on the assembling variant chosen; a package (K) consisting of the other extreme rotor, with one front face - either the lower (C) or the upper (B) rotor - and a number of intermediate, disk rotors (F_1, F_2...) with two front faces, interspersed between the rotors of the other package (J), all the package rotors fixed each by its hub (11, 10), on the other machine shaft (53, 66, 52) or (67), having on their front faces the tilting blades (12) arranged in such a way as to assure them the same rotation sense, opposite to the other package of rotors (J), between the front faces of two neighboring rotors, rotating to opposite sense from one another, existing one drum each (D_1, D_2....) located, with the deflector (46) placed in the symmetry plane of the inlet connection, the neighboring drums being fixed one to the other by means of spacers (79) located between the fastening elements provided on each drum (48, 49, 80), the whole package of drums thus formed being fixed on the casing (A) lid located in the vicinity of extreme rotor (C) or (B) as part of the package of disk rotors (K), by shorter spacers (50) located at the outside of the rotor and between the plates (48) and (49) fitted on the closest drum to the lid and the respective lid (4) or (5).

46. (Previously presented) A hydraulic or pneumatic machine according to claim 45, characterized by the fact that, in a constructional variant, the package of rotors fixed between them trough the inside (K) consists of a single intermediate disk rotor (F_1) located in the vicinity of the extreme rotor (B) or (C) of the other package of rotors (J), a number of intermediate ring rotors (G) and an extreme ring rotor (E), all the package rotors being rigidly fixed between them by means of longitudinal tie - bars (76) and of fastening plates (77), equally spaced on the outline of the inner frame (7) of each rotor, inside the drum (D), the whole package of rotors being coupled to the machine shaft by the hub of the intermediate disk rotor (F_1), the stator (A) having the lid (4) or (5) located in the vicinity of the extreme ring rotor (E), shaped to the form of the ring rotors (G) and (E) making the two packages.

47. (Previously presented) A hydraulic or pneumatic machine according to claim 42, characterized by the fact that, in view of adjusting it to the use of some pressure fluids, within the annular space covered by the cylindrical shell (1) of the stator (A) and the cylindrical body (45) of the drum (D), interlocked to

it, is provided a cylindrical ring (92) whose height corresponds to the distance between the rotors front faces (B, C), having on each front face a groove (a'') with variable depth wherein move the tilting blades (12) of the rotor bordering the respective surface - with baffles or sealing labyrinths, known in themselves, concentrically arranged on one or both edges of the channel, eventually at one or both its ends, on a radial direction - the two channels - which, in a constructional variant, linking the inlet and the outlet fluids nozzles, in diametrically opposed positions, and, in other constructional variant, when the height of the cylindrical ring (92) exceeds the sum of the maximum depths of the two channels (a'') on its front faces and the channels lengths can be increased so as they partially overlap in plane, being eventually connected to their own fluid inlet (2) and outlet (3) nozzles thus becoming independent to one another, the plane arrangement of the driving mechanism cam of the tilting blade (12) of each rotor (B) or (C) corresponding to the - plane position of respective channel (a'') - each having an initial zone (b'') with increasing depth to the rotation sense of the respective rotor, on the angular sector γ_1 characteristic for blade transition from the passive to the active position, possibly a middle zone (c''), with constant depth, maximum equal to the cylindrical ring (92) height, on the angular sector γ_2 ($\gamma_2 \geq 0^0$) characteristic for keeping the blade in active position on the rotor, and a terminal zone (d'') either having the same depth like the middle zone (c'') or with decreasing depth, on the angular sector γ_3 characteristic for the blade transition from active to passive position, the bottom and the side walls of the channel having, especially in the middle zone(c''), but possibly in the initial zone (b") too, respectively in the terminal zone (d"), the same profile as the surfaces formed by the edges of the tilting blade (12) panel moving in the respective channel, whereas the interstice between the edges of the blade panel and the channel walls, in the respective zone being minimum, so that inside each channel, between the adjacent blades on each rotor, some compartments are formed with a volume varying during the movement of the rotor, to the same sense with the variation of the channel depth; the pressured working fluid - at machine operating as a hydraulic or pneumatic motor - either a gas - coming from e.g. a storage tank or an outside combustion chamber (93) of a combustion mixture, known in themselves or a liquid - entering the machine by a joint feed nozzle (2) or by separate nozzles (2), each connected to radial inlet channels (i'') executed in the cylindrical ring (92), gets into the initial zone (b''), simultaneously into both channels and separately respectively, into each one, either by some branches (j''), (u'') respectively of the inlet channel (i'') connected to a slot (k'') made on the shaped face (e'') of the channel bottom, and a groove (m'') respectively, with a variable or constant depth, made along a certain portion of the same surface, possibly on the entire initial zone (b") of the cannel (a") in the case in which the working fluid is a liquid or by

some slots (l'') executed along a certain length, possibly on the entire initial zone (b") of the cannel (a") in the case in which the working fluid is a liquid in one or both lateral faces respectively - outside (g'') and inside (h'') one - of the channel, directly connected to the respective inlet channel (i''), the pressure value in each compartment covered between two successive blades of the rotor evolving, in function of the working fluid compressibility, either decreasing - at the same time with the increase of its volume - from a maximum value, in the compartments with minimum volume directly connected to the feed nozzle to a minimum value in the compartments with maximum volume located on the middle zone (c''), in the case of a compressible fluid, so that the driving forces determining the rotor movement should be exerted in all the compartments with increasing volume, located in the initial zone (b'') of the channel (a'') having variable values with time, proportional to the fluid instantaneous pressure and with the height difference between the vertex of the two blades delimitating the compartment, measured in the respective moment against the front face of the rotor, being the same in all the compartments with increasing volume, in case of use of a liquid, the driving forces being exerted on the tilting blades (12) located in the middle zone (c'') of the channel (a'') due to the fluid pressure difference in the two zones (b'', d'') bordering it, the torsion moment at the shaft of each rotor resulting from the sum of the moments given by the respective driving forces; the working fluid is discharged from each channel (a'') by a common outlet nozzle (3) or separate outlet nozzles (3), either by slots (o'') made in one or both the lateral faces - external (g'') or internal (h'') - along the entire length of the terminal zone (d''), communicating by some radial channels (r'') existing in the cylindrical ring (92) with the respective outlet nozzle (3), or by a groove (p'') with variable or constant depth made along the bottom surface (f'') of the terminal zone (d''), connected by slot (q'') to the corresponding radial channels (r''), or, in other constructional variant, having the rotor driven by a momentum applied on its shaft so that the tilting blades (12) should run the channels with variable section (a'') to the opposite sense - the angle α vertex between the blade and the front face of the rotor being arranged to the opposite sense of rotation – machine operates like a hydraulic pump or compressor, the working fluid, being sucked in the terminal zone (d'') of the channel due to the increase of the volume of the mobile compartments formed on the rotor when running across this zone, through the discharge nozzle (3) becoming the suction nozzle, and discharged through the suction nozzle (2) which became the discharge nozzle, at a pressure higher than the suction pressure.

48. (Previously presented) A hydraulic or pneumatic machine according to claim 47, characterized by

the fact that, in a constructional variant, the rotors (B) and (C) have one or several concentric rows of tilting blades (12) that may differ from one another, from one rotor to the other or from one row to the other, in terms of shape, dimensions and position on rotor, each row of tilting blades being provided with a driving mechanism of its own, whereas, on the front face of the cylindrical ring (92), bordering the front face of the respective rotor, is a corresponding number of concentric channels (a_1'', a_2''.....) with variable depth, framed by baffles or sealing labyrinths eventually, in order to diminish the pressure losses between the neighboring channels or to the outside, the orientation of the driving mechanisms of the tilting blades on each row of the rotor blades being correlated to the plane position of the channel (a_1'', a_2''.....) they run in, each the channels (a_1'', a_2''.....) could be either independent, each having an inlet (2) and outlet (3) connection of its own, so that on the surface of each rotor are formed independent circuits with the same or different fluids, the number of which is equal to the number of the concentric rows of tilting blades, the orientation of the angle vertex α formed between the blades of each row and the rotor surface - to the rotor moving sense or its opposite sense - determining the operating conditions of each circuit - motor, pump or compressor respectively, whereas the two outlet shafts of the machine, coupled to the rotors (B, C) can rotate to the same or opposite senses, or coupled between them – those from the same or opposite surfaces of the cylindrical ring (92) – either in series, one in continuation to the other, by a shaped intermediate channel ($t_{i,i+1}$'') connecting the terminal zone (d_i'') of a channel to the initial zone (b_{i+1}'') of the other channel, forming an independent circuit where the working fluid incoming and outgoing is carried out at the circuits ends whereas, by adequately choosing the section of each channel and the dimensions and number of the tilting blades (12) running in it, it is assured the steady increase and decrease respectively of the volume of each compartment covered between two successive tilting blades along the whole circuit, so that, depending on the moving sense of the blades in the channels, the fluid is subject from the circuit inlet to outlet to a prolonged expansions - compression respectively, or in parallel, with joint inlet and outlet connections, run to the same sense by the rotor tilting blades, on the cylindrical ring (92) faces eventually existing simultaneously independent circuits formed of one channel and circuits formed of several channels, coupled in series or in parallel, each circuit running according to the tilting blades orientation against the rotor as a motor or as a pump, with the same or different fluids, so, in a constructional variant, by the adequate orientation of the channels (a_1'', a_2''.....) and tilting blades (12) corresponding to these, the two rotors (B,C) have the same moving sense and they can be mounted on the same outlet shaft of the machine.

49. (Previously presented) A hydraulic or pneumatic machine according to claim 48, characterized by the fact that, in a constructional variant, is multistaged, the rotors of each stage, with the same or different diameters - having the tilting blades arranged on one or several concentric rows, either with an even number of stages, having several rotors grouped by two packages each coupled to one of the motor shafts: a package (H) consisting of two extreme rotors with a front face each, provided with tilting blades, located face to face, one on a machine shaft - either the upper rotor (B) or the lower rotor (C), whereas the other, a ring rotor (E), different from constructional view point only through the lack of the coupling elements on the machine shaft - the disk (8) or (9) and the hub (10), (11) respectively - and, in case the machine has more than two stages, a number of intermediate, ring like rotors (G_1, G_2....) located between the extreme rotors, each consisting of a ring plane (6) fixed on a frame (7) and having two parallel front faces provided with tilting blades (12), all the rotors of the package (H), fixed between them by elements known in themselves, for example by means of fastening plates (77) and some tie bars (76), located on their outer outline, so that, the whole package (H), by the hub (10) or (11) on the rotor fixed on a shaft (B) or (C), conveys the motion to the respective shaft of the machine (52, 67, 53 or 66), and a package (I) consisting of one or several intermediate rotors respectively, in the form of a disk (F_1, F_2.....) intercalated between the rotors of the other package, similar from constructional view point to the ring like rotors (G), different from these consisting in the existence of the coupling elements - a disk (9 or 8) provided with a hub (11 or 10) - to the other shaft of the machine (53, 66, 52 or 67), the rotor having two parallel front faces provided with tilting blades (12) similar to those existing on the rotors of the other package (H) at the respective stage but arranged in such a manner as to assure it a rotation movement to the opposite sense of the rotors of the other package – or with odd number of stages - having the rotors grouped into two packages with an equal number of rotors, each coupled to one of the machine shafts: a package (J) consisting of an extreme rotor, with one front face, fixed on a machine shaft - either the upper rotor (B) or the lower rotor (C) - and a number of intermediate ring rotors (G_1, G_2....) with two front faces, all the package rotors being fixed between them, fitted with tilting blades (12) on their front faces arranged in such a way as to assure them the same rotation sense, the whole package being coupled to the machine shaft (52, 67, 53 or 66) on which the extreme rotor (B) or (C) is fixed by its hub (10) or (11), and a package (K) consisting of the other extreme rotor, with one front face - either the lower (C) or the upper (B) rotor - and a number of intermediate disk rotors (F_1, F_2...) with two

front faces, interspersed between the rotors of the other package (J) - all the package rotors fixed each by its hub (11, 10), on the other machine shaft (53, 66, 52 or 67), having on their front faces the tilting blades (12) arranged in such a way as to assure them the same rotation sense, opposite to the other package of rotors (J), the distance between the front faces of the neighboring rotors being constant at all the stages of the machine or different from one stage to the other, depending on the height of the cylindrical ring (92) fitted with the drum (D) - the tilting blades (12) on the two front faces of each intermediate rotor (F_1, F_2.... G_1, G_2.....) being either independent acted, or coupled two by two, in view of synchronizing their movement, e.g. by means of some geared segments (81), permanently engaged, installed on the shaft of each blade, or in other manner, known in themselves, so that when one is driven - the leading blade - the other - the led blade - shall any moment take a symmetrical position to it; a number of drums (D_1, D_2....) equal to the number of machine stages, each drum (D) being fitted with a cylindrical ring (92) whose height corresponds to the distance between the front faces of the neighboring rotors, having on each front face of its one or more channels (a'') with variable depth, wherein move the tilting blades (12) of the rotor neighboring to the respective face, the channels (a'') provided at various stages of the machine being capable to be coupled between them by means of pipes (95) connecting the radial inlet (i'') - outlet (r'') channels respectively - from one stage to those of the other stage, according to the connections plan chosen for the formation of a circuit, directly, if the two stages are consecutive, or by crossing the cylindrical rings (92) of the intercalated stages, provided for this purpose with some properly arranged radial channels (w''), communicating to the respective connecting pipes (95), the latter being located either to the outside of the cylindrical rings (92), or inside the drums (D), in the same way as the fastening elements of the neighboring drums (D), the position of the inlet (i'') - outlet (r'') radial channels - to the outside or the inside of the cylindrical ring (92) - being determined by the position of the respective connecting pipe, whereas the inlet (2) and outlet (3) nozzles of the machine, for each circuit, are located on the cylindrical ring (92) making part of the drum (D) directly mounted on the machine casing, the neighboring drums with cylindrical rings (92) being fastened to one another so that the rotors movement be not hindered, either by means of spacing rings (94) placed between the two adjacent, cylindrical rings (92), concentrically to them - either outside the disk rotors (F) or inside the ring rotors (G) - which can be provided with some channels (u'') and (v''), linked to the inlet (i'') - outlet (r'') channels respectively, made in the neighboring cylindrical rings (92) in order to couple the fluid circuits of the various stages of the machine, or by other means, known in themselves, the whole drums package thus formed being fastened onto the casing (A) lid located in the vicinity of the extreme

ring rotor (E); driving mechanisms of the tilting blades (12), either for all the rotors of the machine, installed on the shaft of each blade, dismissing the permanent coupling of the tilting blades located on the opposite faces of the intermediate rotors (F, G), so that the cams of the independent driving mechanisms of the blades at each stage can have a different plane arrangement from one stage to the other, according to the arrangement of the grooves with variable sections (a'') the tilting blades (12) run in, on the respective stage and row, or only on the shaft of the leading blades in the case of intermediate rotors (F_1, F_2... G_1, G_2...) with the blades on the two faces coupled between them in order to assure the synchronized movement of them, or only for the tilting blades (12) on the rotors located either at the first or the last stage of the rotors package, the movement being simultaneously conveyed from each of them to all the leading blades existing on the same vertical in the respective package of rotors, either, in the case of the rotors package (H, J) by a joint rack (87), located in a casing (88) fitted on the perifery of the rotors making the respective package, engaged with some pinions (86) fixed at the outside of the rotor, on the end of each shaft (15) of the respective leading blades, or, in the case of the rotors package (I, K) by some linking elements coupled to the driving mechanisms of the tilting blades from all the stages of the package, built in different constructional variants, according to the driving mechanism of each tilting blade, known in themselves, e.g. a joint stem (89) hinged to all levers (21) or a joint vertical rack (90) which engages simultaneously the pinions (26) from all the stages, or a joint shaft (91) on which are fixed all the cone gears (30) of the rotors package found on the same vertical, the disks of all rotors making the respective package being provided with orifices (m') permitting the fitting of the mentioned linking elements.

50. (Previously presented) A hydraulic or pneumatic machine according to claim 49, characterized by the fact that, in a constructional variant, in view of diminishing the resulting axial forces acting on the two shafts, the rotors packages consist only of rotors with tilting blades (12) on both faces - either a disk rotor (F) coupled to each of the machine shafts or a package (I) of disk rotors (F), each coupled directly to one of the machine shaft, and a package (J) consisting of ring rotors (G) and an extreme rotor (B) or (C) devoid of tilting blades on its front face, meant only to couple the whole package (J) to the other machine shaft by its disk (8, 9) respectively, extended up to the machine periphery, and its hub (10, 11) respectively, as part of it, whereas the cylindrical rings (92) fitted on the drums (D) of each stage, have corresponding channels (a''), with variable depth, on one or both front faces as they border one front face with tilting blades (12), in the case of the rings located at extremities, or two front faces with tilting

blades (12) in the case of those located in intermediate positions, in the particular case when the tilting blades on the two front faces of each rotor are identical as form and arrangement and the fluids pressure in the corresponding channels (a'') with variable depth are equal, the axial force is zero.

51. (Previously presented) A hydraulic or pneumatic machine according to claim 48, characterized by the fact that, in a constructional variant, has a single extreme rotor (B) or (C) provided with one or several rows of tilting blades (12), the cylindrical ring (92) having, accordingly, one or several channels with variable depth (a'') on the neighboring face of the rotor and being fastened on the lid (5), (4) respectively opposite to the respective rotor.

52. (Previously presented) A hydraulic or pneumatic machine according to claim 49, characterized by the fact that, in a constructional variant, in view of diminishing the resulting axial force acting on the rotor, has either a single disk type rotor (F) with tilting blades (12) on both faces, or several disk type rotors (F) spaced between them, in the form of package (I) of rotors mounted on a single machine shaft (52) or (53), eventually capable of free axial movement on it, two cylindrical rings (92) with variable depth channels (a'') on one face, mounted on the upper (4) and lower (5) lids of the casing (A) and a number of cylindrical rings (92) respectively, with variable depth channels (a'') on both faces, located between the front faces of the neighboring rotors.

53. (Previously presented) A hydraulic or pneumatic machine according to claim 49, characterized by the fact that, in a constructional variant, in view of diminishing the resulting axial forces acting on the shaft, has either a single ring type (G) rotor with tilting blades on both faces, or several ring type (G) rotors spaced between them, and an extreme rotor (B) or (C) devoid of tilting blades on its front face, all making a package of rotors fixed on one motor outlet shaft (52) or (53) by the disk (8) or (9) extended up to the extreme rotor periphery (B) or (C) and by the its hub (10) or (11), or it can freely move axially on the respective shaft, two cylindrical rings (92) with variable depth channels (a'') on one face and, eventually, a number of cylindrical rings (92) with variable depth channels (a'') on both faces, located between the neighboring front faces provided with tilting blades.

54. (Previously presented) A pneumatic machine according to claim 48, characterized by the fact that, in a constructional variant the working fluid consists of the gases resulting from fuel combustion in

a combustion chamber equipped with devices for the supply, formation and ignition, of fuel mixture, all known in themselves, located either outside (93) or inside (s'') the machine, id est in a cylindrical ring (92) connected, by means of the inlet connection (2) by one or several radial channels (i'') respectively, to the channels with variable depth (a'') of a motor circuit wherein the tilting blades of the rotors run, the compression of the air or of the fuel mixture fed into the combustion chamber being achieved either in a separate compressor or in a pumping circuit consisting of one or several channels with variable depth (a'') inside the same machine.

55. (Previously presented) A pneumatic machine according to claim 49, characterized by the fact that, in a constructional variant the working fluid consists of the gases resulting from fuel combustion in a combustion chamber equipped with devices for the supply, formation and ignition, of fuel mixture, all known in themselves, located either outside (93) or inside (s'') the machine, id est in a cylindrical ring (92) or in a ring spacer (94) connected, by means of the inlet connection (2) by one or several radial channels (i'') respectively, to the channels with variable depth (a'') of a motor circuit wherein the tilting blades of the rotors run, the compression of the air or of the fuel mixture fed into the combustion chamber being achieved either in a separate compressor or in a pumping circuit consisting of one or several channels with variable depth (a'') inside the same machine.

56. (Previously presented) A pneumatic machine according to claim 50, characterized by the fact that, in a constructional variant the working fluid consists of the gases resulting from fuel combustion in a combustion chamber equipped with devices for the supply, formation and ignition, of fuel mixture, all known in themselves, located either outside (93) or inside (s'') the machine, id est in a cylindrical ring (92) or in a ring spacer (94) connected, by means of the inlet connection (2) by one or several radial channels (i'') respectively, to the channels with variable depth (a'') of a motor circuit wherein the tilting blades of the rotors run, the compression of the air or of the fuel mixture fed into the combustion chamber being achieved either in a separate compressor or in a pumping circuit consisting of one or several channels with variable depth (a'') inside the same machine.

57. (Previously presented) A pneumatic machine according to claim 51, characterized by the fact that, in a constructional variant the working fluid consists of the gases resulting from fuel combustion in a combustion chamber equipped with devices for the supply, formation and ignition, of fuel mixture, all

known in themselves, located either outside (93) or inside (s'') the machine, id est in a cylindrical ring (92) or in a ring spacer (94) connected, by means of the inlet connection (2) by one or several radial channels (i'') respectively, to the channels with variable depth (a'') of a motor circuit wherein the tilting blades of the rotors run, the compression of the air or of the fuel mixture fed into the combustion chamber being achieved either in a separate compressor or in a pumping circuit consisting of one or several channels with variable depth (a'') inside the same machine.

58. (Previously presented) A pneumatic machine according to claim 52, characterized by the fact that, in a constructional variant the working fluid consists of the gases resulting from fuel combustion in a combustion chamber equipped with devices for the supply, formation and ignition, of fuel mixture, all known in themselves, located either outside (93) or inside (s'') the machine, id est in a cylindrical ring (92) or in a ring spacer (94) connected, by means of the inlet connection (2) by one or several radial channels (i'') respectively, to the channels with variable depth (a'') of a motor circuit wherein the tilting blades of the rotors run, the compression of the air or of the fuel mixture fed into the combustion chamber being achieved either in a separate compressor or in a pumping circuit consisting of one or several channels with variable depth (a'') inside the same machine.

59. (Previously presented) A pneumatic machine according to claim 53, characterized by the fact that, in a constructional variant the working fluid consists of the gases resulting from fuel combustion in a combustion chamber equipped with devices for the supply, formation and ignition, of fuel mixture, all known in themselves, located either outside (93) or inside (s'') the machine, id est in a cylindrical ring (92) or in a ring spacer (94) connected, by means of the inlet connection (2) by one or several radial channels (i'') respectively, to the channels with variable depth (a'') of a motor circuit wherein the tilting blades of the rotors run, the compression of the air or of the fuel mixture fed into the combustion chamber being achieved either in a separate compressor or in a pumping circuit consisting of one or several channels with variable depth (a'') inside the same machine.